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**The following details are taken from the documents
filed by the Applicant:**

Request for examination under § 44 of the German
Patents Act has been filed.

The body of the text of the specification is identical to DE 197 47 197.8 already translated by us (copy attached) with the addition of the following three paragraphs at the end and slightly amended claims attached.

One exemplified embodiment of the method according to the invention, from which further features of the invention will also be apparent, is illustrated in the drawing.

The single Figure of the drawing is a process diagram for a production process according to the invention for making a turkey sausage with a yoghurt content.

Since this process diagram will be self-evident from the brief indications contained in the drawing, a thorough description and explanation of the process diagram will not be given.

A method of producing a sausage, and a sausage preferably produced by this method

The invention also relates to a sausage, particularly a boiling sausage, preferably produced by the above method.

The object of the invention is to indicate the possibility of making a sausage which takes into account consumer wishes.

To solve this problem, a method of making sausage is characterised in that yoghurt is added to the sausage-making material, said yoghurt having a pH which is not lower than the isoelectric point of the sausage material or only lower enough for the total material containing the yoghurt to have a pH which is above the critical isoelectric-point range of the sausage material.

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~~Patent Application~~

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~~A method of producing a sausage, and a sausage
preferably produced by this method.~~

DESCRIPTION

The invention relates to a method of producing a sausage, particularly a boiling sausage.

The invention also relates to a sausage, particularly a boiling sausage, produced preferably by the said method.

For some time consumers have been demanding products, particularly meat and sausage products, which are more digestible and lower in calories and therefore regarded as "healthier". This is frequently achieved by reduction of fat, which in this respect results in a diet food. To this end or alternatively, the meat mainly used for sausage production is if possible more lean and, if required, richer in protein than other meat. Increasing use, for example, is made of poultry meat.

The object of the invention is to disclose a further possibility of producing a sausage which meets the wishes of consumers as described.

To this end, a method of producing sausage is characterised in that yoghurt is added to the sausage-making material and has a pH which is not lower than the isoelectric point of the sausage material or only lower enough for the total material containing the yoghurt to have a pH which is above the critical isoelectric-point region of the sausage material.

A first step according to the invention towards the process according to the invention therefore consists in adding a considerable proportion of yoghurt to the sausage-making material, so that the resulting sausage does not only acquire a novel flavour but is also "lighter" in the sense of being much more easily digestible and low in calories. Also, valuable additional proteins and minerals are added to the sausage via the yoghurt.

A problem, however, when adding yoghurt to a sausage material as desired is that the pH of conventional sausage material is usually around 6, i.e. the material is at substantially neutral pH or at any rate is not very strongly acid. A pH which is only slight below the neutral value is also necessary for sausage-making, because the "isoelectric point" of sausage material, at which the substances in the sausage material will not combine in the desired manner but separate and also the sausage material or end product does not have the desired water-binding capacity, is reached at a pH below about 5.5. Consequently the sausage material, more particularly the so-called "Brät", i.e. the lean pigmeat, for a boiled sausage, must not fall below this critical value.

On the other hand yoghurt material, owing to the metabolism of the yoghurt cultures, is relatively acid and usually has a pH around 4.6.

The greater the proportion of yoghurt added to the actual sausage material, therefore, the greater the risk that the pH of the total sausage-making material will fall below a critical value of e.g. 5.5, so that sausage-making in the desired manner will become impossible.

On the other hand it is not possible or desirable for a yoghurt material originally at a pH of e.g. 4.6 to be raised to a higher pH before being added to the sausage material. Firstly this will require additives which e.g. have a rather alkaline pH and are either not permitted for adding to sausage or are undesirable because of their flavour. Secondly a yoghurt altered in this way would itself possibly acquire a different flavour, so that the end result would be that the sausage lost its taste.

Other inventive steps are therefore necessary to obtain the desired object. According to the invention, the yoghurt material is added to the sausage material at a pH which in any case is not much lower than the desired and necessary pH for the total sausage-making material, so that the total material after containing the yoghurt, allowing naturally for the desired proportion of yoghurt, has a pH which is above what is regarded as the critical limiting value of the isoelectric point. In other words, the yoghurt material added to the sausage material must have a pH which is all the higher, the greater the proportion of yoghurt added to

the sausage material. Account must also be taken of the requirement that a yoghurt has and retains a yoghurt flavour only if it retains some acidity, i.e. if the pH of the yoghurt is not too high. A slight fall below the critical pH due to the yoghurt material must therefore be tolerated initially, and can also be tolerated according to the invention.

For example it can be assumed that the pH of the yoghurt can be at a value approximately greater than or equal to 5.2 without the yoghurt losing its desired flavour, and can also remain at this value without the pH of the total sausage-making material being lowered sufficiently to endanger the sausage-making process. In any case such a pH in a yoghurt can be tolerated if the proportion of yoghurt in the total material is to be e.g. about 25% by weight, which of course is a considerable value, and if the critical pH for the total sausage-making material is taken as a minimum of about 5.5.

According to another feature of the invention, which itself has considerable inventive content, the yoghurt for introduction into the sausage-making material is provided relatively freshly after preparation, and is introduced when the yoghurt process has already resulted in a typical yoghurt flavour but the yoghurt cultures owing to their metabolism have not yet reached or produced the pH value regarded as critical.

According to the invention therefore use is made of a very fresh yoghurt which admittedly can already be described as yoghurt and also already has the typical yoghurt flavour but is not at the pH normally reached

by a yoghurt end-product, i.e. initially has a pH of e.g. about 5.2 instead of already having a pH of 4.6. The use of fresh yoghurt of this kind advantageously avoids the need to use means, undesired or possibly harmful, for raising the pH after it has fallen to a low value. Instead the yoghurt is added to the sausage material as soon as the pH value has become just tolerable.

This means, however, that the sausage-producing enterprise must be supplied with suitable yoghurt material, e.g. from a dairy, very quickly after the yoghurt is prepared, the yoghurt being provided for sausage-making possibly at a time when the yoghurt material does not yet deserve to be called yoghurt, which would rather be described as milk inoculated with yoghurt cultures. One possible alternative is for the yoghurt to be prepared, i.e. produced, in the sausage-making factory beforehand.

The time schedule for the sausage-making process will be more favourable if, according to a further feature of the method according to the invention, mildly acidifying, i.e. relatively slow-working yoghurt cultures are used for producing the yoghurt. Such yoghurt cultures are generally known and can be specially chosen for the method of producing sausage according to the invention. Owing to the relatively slow working of the yoghurt cultures, the time to obtain the desired pH can be better adapted so that the mixing of the yoghurt material with the sausage material can be controlled in time more accurately.

Note that in the preceding description of the process according to the invention it has usually been stated that the yoghurt material is added or supplied to the sausage material. Alternatively of course, according to the invention, the sausage material could conversely be added to the yoghurt material in the sense of a kinematic reversal.

According to another feature of the invention, the yoghurt process or the metabolic work or activity of the yoghurt cultures can be stopped by rapidly cooling the yoghurt when the desired pH is reached. The yoghurt process is thus advantageously stopped by the said cooling, so that the materials can be mixed without risk of further reduction in the pH of the yoghurt and consequently in the pH of the total material. Usually it will be advantageous to stop the yoghurt process by cooling the yoghurt material to a temperature in the region e.g. from 0°C to 6°C, i.e. a few degrees above the freezing point of water, thus avoiding actual freezing of the material. Also the sausage material itself is normally and in known manner kept at a temperature of e.g. about 6 to 8°C, so that the yoghurt temperature likewise comes into this range and also the total temperature of the sausage-making material is only slightly changed by adding the two materials. As is known, the temperature required for the yoghurt process and the metabolic activity of the yoghurt cultures is at a value considerably above room temperature, e.g. in the range from 30 to 50°C. The said set temperature is also e.g. a means of controlling the timing of the yoghurt process, more particularly its speed.

Of course, when producing sausages according to the invention, it is necessary to observe and monitor the pH as a process parameter of the materials involved. The pH and temperature must therefore be measured, at least from time to time.

Another advantage of the method of producing sausages according to the invention is that the cooled water normally required for the sausage-making material is not needed but can be replaced by the cooled yoghurt material. The sausage material of course needs a certain water-binding capacity resulting in "swelling". The yoghurt material contains a high proportion of water, which is thus available as required. In addition, even in the known sausage-production process, it is necessary to use water to cool the sausage material, since the material becomes heated by mixing and comminution means, because they end by delivering part of their work energy in the form of frictional heat to the sausage material. Normally it is not desirable for the material intended for subsequent sausage-making to be heated to a temperature e.g. above about 12°C before being made into sausages. In the method according to the invention, cooling with water, which may possibly be necessary as stated, is automatically replaced by cool yoghurt material.

The yoghurt material can be rapidly cooled, i.e. practically shock-cooled, e.g. by using nitrogen. This practically paralyses the activity of the yoghurt cultures.

Advantageously also the yoghurt is continuously kept in motion, e.g. agitated, during the yoghurt process and

also after cooling, because this is an easier and better means of monitoring and stabilising the individually detected pH.

Preferably also the yoghurt material is not added to the sausage material in a single batch but in smaller portions or continuously, e.g. by a pump device. Also the sausage material or the material provided for sausage-making is preferably constantly kept in motion, so as to obtain substantially homogeneous mixing of the material and so that as before the pH of the total material can be monitored and kept above a critical value. The pH should not fall below the critical value even for a short time, as a result of too rapid addition to the yoghurt material. Conversely, of course, care must be taken that the yoghurt material is not exposed to an excessively high pH so as to lose its yoghurt flavour.

In the final state of producing the boiling sausage, the material for sausage-making is poured into sausage-skins and boiled or cooked, e.g. at a temperature of about 72°C, or in any case at a temperature at which the yoghurt cultures are finally killed.

Alternatively of course the method according to the invention can be used to produce a sausage which contains still-living yoghurt cultures which are beneficial to the user and which in known manner can have a useful effect mainly on the intestinal flora and may also e.g. strengthen the immune system.

Independent protection is also claimed for a sausage preferably produced by the method described hitherto,

the sausage according to the invention, substantially independently of the chosen method of production, being characterised in that it contains a proportion of yoghurt substantially uniformly distributed in the sausage material without containing an additive for substantially altering the pH of the sausage material.

If possible the sausage according to the invention, containing a proportion of yoghurt, should therefore not contain more additives or additional products than a conventionally produced sausage, preferably the sausage according to the invention should contain appreciably fewer additives or added products. For example the sausage according to the invention should not contain any phosphates, with the result that the taste of the sausage according to the invention will advantageously become less critical than the taste of conventional sausage. More particularly the sausage should not contain any additives for primarily counteracting the change in the pH of the sausage material due to addition of the yoghurt.

Preferably the sausage according to the invention contains a considerable proportion of yoghurt, e.g. about 25 wt.%.

C L A I M S

1. A method of producing a sausage, particularly a boiling sausage, characterised in that yoghurt is added to the sausage-making material and has a pH which is not lower than the isoelectric point of the sausage material or only lower enough for the total material containing the yoghurt to have a pH which is above the critical isoelectric-point range of the sausage material.
2. A method according to claim 1, characterised in that the pH of the yoghurt is or is kept at a value approximately greater than or equal to 5.2.
3. A method according to claim 1 or 2, characterised in that the yoghurt for introduction into the sausage-making material is provided relatively freshly after preparation, and is introduced when the yoghurt process has already resulted in a typical yoghurt flavour but the yoghurt cultures owing to their metabolism have not yet reached or produced the pH value regarded as critical.
3. A method according to any of the preceding claims, characterised in that mildly acidifying, relatively slow-working yoghurt cultures are used for producing the yoghurt.
5. 4. A method according to one or more of the preceding claims, characterised in that the yoghurt process or the metabolic activity of the yoghurt cultures is stopped by rapidly cooling the yoghurt when the desired pH has been reached.

5. A method according to claim 5, characterised in that the yoghurt is cooled to a temperature of not more than a few degrees above 0°C, without freezing or killing the yoghurt.

7. A method according to claim 5 or 6, characterised in that the cooled yoghurt is added to the sausage material instead of cold water required for limiting the temperature rise in the sausage material.

8. A method according to claim 5 or 6, characterised in that the yoghurt is rapidly cooled with nitrogen.

9. A method according to any of the preceding claims, characterised in that the yoghurt is continuously moved.

10. A method according to any of the preceding claims, characterised in that the yoghurt is added to the sausage material in portions or continuously.

11. A method according to any of the preceding claims, characterised in that the sausage-making material is kept at a temperature range from about 6 to 8°C before sausage-making.

12. A method according to any of the preceding claims, characterised in that the sausage material is solidified by boiling to obtain a boiling sausage at a temperature at which the yoghurt cultures die.

13. A sausage preferably produced according to one or more of the preceding claims, especially a boiling

sausage, characterised in that it contains a proportion of yoghurt substantially uniformly distributed in the sausage material without containing an additive for substantially altering the pH of the sausage material.

14. A sausage according to claim 13, characterised in that the proportion of yoghurt is in the range around 25% by weight.

